

NewsRelease

National Aeronautics and
Space Administration

Langley Research Center
Hampton, Va. 23681-2199



Kathy Barnstorff
Langley Research Center, Hampton, Va.
(Office: 757/864-9886/Cellular: 757 344-8511)

For Release: June 8, 2004

Brian J. Pickett
Delta Air Lines, Atlanta
(Office: 404/715-2554)

Paul Robinson
AeroTech Research (USA), Inc.
(Office: 757/723-1300)

RELEASE: 04-035

NASA AVIATION TURBULENCE DETECTION SYSTEM TO BE FLOWN BY AIRLINE

A NASA developed technology that can automatically alert pilots of potentially dangerous turbulence will soon make its first evaluation flights on a commercial airliner.

The idea behind NASA's Turbulence Prediction and Warning System or TPAWS airborne radar is to give flight crews enough advance warning, so they can avoid turbulence encounters or advise flight attendants and passengers to sit down and buckle up to avoid injury.

Researchers at NASA's Langley Research Center in Hampton, Va., developed TPAWS to detect turbulence associated with thunderstorms as part of the NASA Aviation Safety and Security Program. NASA has teamed with Delta Air Lines, Atlanta; AeroTech Research, Hampton, Va.; and Rockwell Collins, Cedar Rapids, Iowa, for the in-service evaluation of a production-prototype airborne radar unit with turbulence hazard prediction capabilities.

Delta will install the TPAWS/Rockwell Collins radar unit on a B737-800 this summer. Delta flight crews will use and evaluate the technology during regularly scheduled flights in the U.S. and South America. The prototype is expected to fly for six to nine months.

Researchers from NASA, the companies involved and the Federal Aviation Administration will evaluate interim and final results of the turbulence prediction radar system. If the evaluation is successful, the technology may be adopted for new and existing aircraft.

-more-

"The TPAWS technology is an enhanced turbulence detection radar system, which detects atmospheric turbulence by measuring the motions of the moisture in the air," said Jim Watson, NASA Turbulence Prediction and Warning Systems project manager. "It is a software signal processing upgrade to existing predictive Doppler wind shear systems that are already on airplanes."

"Delta Air Lines is always interested in evaluating new technologies that offer the potential for improved ride quality and safety for our customers and flight crews," said Ira Pearl, Delta's flight operations technical support director.

Researchers have already tested TPAWS on a NASA 757 research aircraft based at NASA Langley. The TPAWS equipped plane searched for turbulence activity around thunderstorms for eight weeks. The aircraft flew within a safe distance of storms, so researchers could experience the turbulence and compare the radar prediction to how the plane responded to the encounters. After one severe patch of turbulence, a NASA research pilot said his confidence in the enhanced radar had "gone up dramatically," since the plane's weather radar showed nothing at the same time the TPAWS display showed rough skies ahead.

Atmospheric turbulence encounters are the leading cause of injuries to passengers and flight crews in non-fatal airline accidents. Federal Aviation Administration statistics show an average of 58 airline passengers are hurt in U.S. turbulence incidents each year. Ninety eight percent of those injuries happen because people don't have their seat belts fastened. Turbulence encounters are hazardous and they cost the airlines money and time, in the form of re-routing flights, late arrivals, and additional inspections and maintenance to aircraft.

The NASA Aviation Safety and Security Program is a partnership with the Federal Aviation Administration, aircraft manufacturers, airlines and the Department of Homeland Security to reduce the fatal aircraft accident rate and protect air travelers and the public from security threats. Researchers at four NASA centers are working to develop advanced, affordable technologies to make flying safer and more secure. Langley; Ames Research Center at Moffett Field, Calif.; Dryden Flight Research Center in Edwards, Calif.; and Glenn Research Center in Cleveland, are working on the program.

For more on the NASA Aviation Safety and Security Program please check the Internet at:

<http://avsp.larc.nasa.gov>